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A STUDY OF THE DURATION OF FERTILITY IN POULTRY

V. CURTIS

A question that no doubt has occurred to many zoologists is that of the duration of fertility in fowls. The phases of that question included in this report are: the length of time elapsing from mating to laying of the first fertile egg, the length of time that a hen will lay fertile eggs from a single mating, and the effects of more than one mating on fertile production using the same male or two males of different breeds (cross breeding).

A review of the literature shows that some actual research has been conducted on this matter as well as a number of observations incidental to other projects. Crew, Dunn, and Philips each have reported that fertile eggs may be expected between 24 and 48 hours after mating and in one case 21 hours was reported. Others find that over 36 hours are necessary. Fertility has been found by several to endure as long as 32 days with 15 days as the approximate average. However, great pains are taken to show that vigorous chicks are rarely hatched from eggs laid later than ten days after the removal of the male. Philips finds that the average number of eggs from a single mating is five.

Dunn and Crew have both noted the indication of selective or competitive fertility within breeds as a result of mating a hen to a male of the same breed and then to one of a different breed.

In this investigation three breeds of domestic poultry were used, namely, White Leghorn, Rhode Island Red, and White Plymouth Rocks. The hens were kept in a pen away from the males, which were confined separately in poultry exhibit cages. All birds were leg banded and the hens were trapnested in order to establish identities in case of mating or laying. Matings were effected by placing the females in the cages with their respective males. If copulation ensued the fact was recorded on the hen's egg record sheet. In cases of double matings hens were mated to one male and then to the other immediately.

All eggs laid were recorded, incubated 80 hours and then candled to determine their fertility. In the double matings the eggs were hatched in order to ascertain the male parent of the chick. In

mating White Rock pullets to White Rock and Rhode Island Red males all chicks having other than the creamy white down of White Rocks were attributed to the Rhode Island Red male. In mating Rhode Island Red pullets to Rhode Island Red and White Rock males all chicks having other than the reddish buff down of the Rhode Island Reds were attributed to the White male. This was possible because of the behavior of the genetic color factors involved.

In general the results of this study agree with those heretofore reported although none of the extreme cases were duplicated. From 56 matings, 50 per cent of the first fertile eggs were laid between 36 and 48 hours and 75 per cent were laid between 36 and 72 hours. Fertility from a single mating extend from two to twenty days with 9.2 ± 0.4 as the mean. The number of fertile eggs from a single mating ranged from one to eleven with five as the modal class. The mean number of eggs from a single mating was 4.6 ± 0.2 .

More than one mating did not lengthen the duration of fertile production but the percentage of fertile eggs laid was increased. In the former case 72.6 per cent of the eggs laid while under the influence of a mating were fertile while in the latter 83.3 per cent were fertile. No indications of selective fertility were noted in the cases of double matings although the data were too few to be conclusive.

Any discrepancies in these results may be attributed directly to the facts that observations were made on a group of birds at other than their normal production period, *i. e.*, during the winter, and that they were in close confinement out of the sunlight. Aside from this every effort was extended for their well-being.

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